

# Anh Phuong Tran

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## EDUCATION

Ph.D.	Université Catholique de Louvain, Belgium, 2014, Thesis title: " <i>Full-wave inversion of near-field GPR data for hydrogeophysical characterization of soil</i> "
M.S.	Sejong University, South Korea, 2010
B.C.	Vietnam National University-Hanoi, Vietnam, 2005

## PROFESSIONAL EXPERIENCE

6/2014 - present	Postdoc, Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, U.S.
2/2014 – 6/2014	Postdoc, Environmental Science, Earth and Life Science Institute, Université Catholique de Louvain, Belgium
4/2010 – 2/2014	Research assistant, Environmental Science, Earth and Life Science Institute, Université Catholique de Louvain, Belgium
2/2008 – 2/2010	Research assistant, Waterway Research Institute, Sejong University, South Korea
6/2005 – 2/2008	Hydrological Researcher, Center for Hydrology & Water Resources, Vietnam Institute of Hydrology, Meteorology and Environment, Vietnam

## RESEARCH INTERESTS

Surface and subsurface hydrological and biochemical modeling  
Permafrost geophysics  
Data assimilation in geosciences  
Geophysical and remote sensing techniques  
Deterministic and stochastic inverse modeling and uncertainty analysis  
Bayesian data fusion

## AWARDS AND HONORS

Rencontres du Vietnam Award, 2002

Best Undergraduate Student Award, Vietnam National University, Hanoi, 2005

## **MEMBERSHIP**

European Geoscience Union (EGU)  
American Geoscience Union (AGU)

## **PUBLICATIONS**

### ***Peered review journal articles***

1. **Tran, Anh Phuong**, Bogaert, Patrick, Wiaux, Francois, Vanclooster, Marnik, & Lambot, Sébastien (2015). High-resolution space-time quantification of soil moisture along a hillslope using joint analysis of ground penetrating radar and frequency domain reflectometry data. *Journal of Hydrology*, 523, 252-261. doi:10.1016/j.jhydrol.2015.01.065
2. **Tran, Anh Phuong**, Vanclooster, Marnik, Zupanski, Milija, & Lambot, Sébastien (2014). Joint estimation of soil moisture profile and hydraulic parameters by ground-penetrating radar data assimilation with maximum likelihood ensemble filter. *Journal of Water Resources Research*, 50(4), 3131-3146. doi :10.1002/2013WR014583
3. **Tran, Anh Phuong**, André, Frédéric, & Lambot, Sébastien (2014). Validation of Near-Field Ground- Penetrating Radar Modeling Using Full-Wave Inversion for Soil Moisture Estimation. *IEEE Transactions on Geoscience and Remote Sensing*, 52, 5483-5497. doi :10.1109/TGRS.2013.2289952
4. **Tran, Anh Phuong**, Vanclooster, Marnik, & Lambot, Sébastien (2013). Improving soil moisture profile reconstruction from ground-penetrating radar data: a maximum likelihood ensemble filter approach. *Hydrology and Earth System Sciences*, 17, 2543-2556. doi :10.5194/hess-17-2543-2013
5. **Tran, Anh Phuong**, André, Frédéric, Craeye, Christophe, & Lambot, Sébastien (2013). Near-field or far- field full-wave ground penetrating radar modeling as a function of the antenna height above a planar layered medium. *Progress in Electromagnetics Research B*, 141, 415-430.
6. **Tran, Anh Phuong**, Warren, C., André, Frédéric, Giannopoulos, Athanasios, & Lambot, Sébastien (2013). Numerical evaluation of a full-wave antenna model for near-field applications. *Near Surface Geophysics*, 11(2), 155-165. doi :10.3997/1873-0604.2012052
7. **Tran, Anh Phuong**, Mahmoudzadeh Ardekani, Mohammad Reza, & Lambot, Sébastien (2012). Coupling of dielectric mixing models with full-wave ground-penetrating radar signal inversion for sandy-soil-moisture estimation. *Geophysics*, 77, 33-44. doi :10.1190/GEO2011-0100.1
8. Yoon, Seong-Sim, **Tran, Anh Phuong**, & Bae, Deg-Hyo (2012). **Quantitative Comparison of the Spatial Distribution of Radar and Gauge Rainfall Data**. *Journal of Hydrometeorology* 12/2012; 13:1939–1953. doi: <http://dx.doi.org/10.1175/JHM-D-11-066.1>
9. Bae, Deg-Hyo, **Tran, Anh Phuong**, & Yoon, Seong-Sim. A Method to Evaluate the Radar Rainfall Accuracy for Hydrological Application. *Journal of Korea Water Resources Association*, 42(12), 1039-1052. doi: 10.3741/JKWRA.2009.42.12.1039, 2009.

### **Book Chapter**

1. Minet, Julien; Jadoon, Khan Zaib; Jonard, François; Mahmoudzadeh, Mohammad; **Tran, Anh Phuong**; Lambot, Sébastien. *Advanced ground-penetrating radar for soil moisture retrieval*. In book: *Multiscale Hydrologic Remote Sensing: Perspectives and Applications*, Publisher: CRC Press, Editors: Ni-Bin Chang, Yang Hong, 2012.
2. **Tran, Anh Phuong** and Lambot, Sébastien. Development of intrinsic models for describing near-field antenna effects, including antenna-medium coupling, for improved radar data processing using full-wave inversion. In press.

### **Conference Proceedings**

1. **Tran, Anh Phuong**, & Lambot, Sébastien. (2014). Intrinsic modeling of antenna array in near-field conditions. In Proceedings of the 15th International Conference on Ground Penetrating Radar, 519-524. Doi: 10.1109/ICGPR.2014.6970478
2. Mertens, Laurence, **Tran, Anh Phuong**, & Lambot, Sébastien. (2014). Determination of the stability of a pulse GPR system and quantification of the drift effect on soil material characterization by full-wave inversion. In Proceedings of the 15th International Conference on Ground Penetrating Radar, 479-483. Doi: 10.1109/ICGPR.2014.6970471
3. De Coster, Albéric, **Tran, Anh Phuong**, & Lambot, Sébastien. (2014). Impact of the antenna offset and the number of frequencies on layered media reconstruction using full-wave inversion in near-field conditions. In Proceedings of the 15th International Conference on Ground Penetrating Radar, 491-496. Doi: 10.1109/ICGPR.2014.6970473
4. Mourmeaux, Nicolas, **Tran, Anh Phuong**, & Lambot, Sébastien. (2014). Soil permittivity and conductivity characterization by full-wave inversion of near-field GPR data. In Proceedings of the 15th International Conference on Ground Penetrating Radar, 497-502. Doi: 10.1109/ICGPR.2014.6970474
5. André, Frédéric, **Tran, Anh Phuong**, Mourmeaux, Nicolas, Mahmoudzadeh Ardekani, Mohammad Reza, Bogaert, Patrick, & Lambot, Sébastien (2013). Integrated modeling of near-field ground-penetrating radar and electromagnetic induction data for digital soil mapping. Bornimer Agrartechnische Berichte, Heft 82, 211-219.
6. Mourmeaux, Nicolas, **Tran, Anh Phuong**, André, Frédéric, & Lambot, Sébastien. (2013). Near-field Ground-penetrating Radar Modeling for Characterization of a Reference Water Layer at Low Frequencies. In EarthDoc (p. p. WeP01).
7. Mertens, Laurence, **Tran, Anh Phuong**, & Lambot, Sébastien. (2013). Towards physically-based filtering of the soil surface, antenna and coupling effects from near-field GPR data for improved subsurface imaging. In proceeding 6th International Workshop on Advanced Ground Penetrating Radar. doi: 10.1109/IWAGPR.2013.6601524
8. Lambot, Sébastien, **Tran, Anh Phuong**, & André, Frédéric. (2012). Near-field modeling of radar antennas for wave propagation in layered media: When models represent reality. In Proceedings of 14th International Conference on Ground Penetrating Radar. 42-46. doi: 10.1109/ICGPR.2012.6254829
9. André, Frédéric, **Tran, Anh Phuong**, Mourmeaux, Nicolas, & Lambot, Sébastien. (2012). Integrated modeling of near-field ground-penetrating radar and electromagnetic induction data for reconstructing multilayered media. In Proceedings of 14th International Conference on Ground Penetrating Radar. 407-412. doi: 10.1109/ICGPR.2012.6254900

10. **Tran, Anh Phuong**, Wiaux, François, & Lambot, Sébastien (2012). Soil moisture estimation using full-wave inversion of near- and far-field ground-penetrating radar data: A comparative evaluation. In Proceedings of 14th International Conference on Ground Penetrating Radar, 296 - 300. Doi: 10.1109/ICGPR.2012.6254877
11. **Tran, Anh Phuong**, Warren, C., André, Frédéric, & Lambot, Sébastien (2011). Numerical Evaluation of a Full-Wave Antenna Model for Near Field Applications. In proceeding 6th International Workshop on Advanced Ground Penetrating Radar. Doi: 10.1109/IWAGPR.2011.5963849

### **Conference Abstract**

1. **Tran, Anh Phuong**, Dafflon, Baptiste, Hubbard, Susan S., Kowalsky, Michael B., Tokunaga, Tetsu K, Faybisenko , Boris, Long, Phillip, Monitoring Soil Hydraulic and Thermal Properties using Coupled Inversion of Time-lapse Temperature and Electrical Resistance Data, AGU General assembly, San Francisco, United States. 2014.
2. De Coster, Albéric, **Tran, Anh Phuong**, & Lambot, Sébastien (2014). Information content in frequency-dependent, multi-offset GPR data for layered media reconstruction using full-wave inversion. Geophysical Research Abstracts, 16, EGU2014-658-1.
3. Lambot, Sébastien, Mahmoudzadeh Ardekani, Mohammad Reza, **Tran, Anh Phuong**, Nottebaere, Martijn, Leonard, Aline, Defourny, Pierre, & Neyt, Xavier. (2014). High-resolution mapping of soil moisture at the field scale using ground-penetrating radar for improving remote sensing data products. In Geophysical Research Abstracts, vol.16 (p. p. EGU2014-9991).
4. Van Oost, Kristof, Nadeu Puig-Pey, Elisabet, Wiaux, François, Wang, Zhengang, Stevens, François, Vanclooster, Marnik, **Tran, Anh Phuong**, Bogaert, Patrick, Doetterl, Sebastian, Lambot, Sébastien, & van Wesemael, Bas. (2014). Soil organic matter dynamics and CO<sub>2</sub> fluxes in relation to landscape scale processes: linking process understanding to regional scale carbon mass-balances. In Geophysical Research Abstracts, vol.16 (p. p. EGU2014-11107).
5. **Tran, Anh Phuong**, Vanclooster, Marnik, & Zupanski, Milija. (2014). Joint Estimation of Soil Moisture Profile and Hydraulic Parameters by Ground-penetrating Radar Data Assimilation with Maximum Likeli-hood Ensemble Filter. Communication présentée à PhD Student Day ENVITAM, Espace Senghor, Gembloux.
6. **Tran, Anh Phuong**, André, Frédéric, & Lambot, Sébastien (2013). Soil Moisture Characterization using a new Full-wave, Near-field Antenna Model: From Laboratory to Field Applications. Communication présentée à International Conference NovCare 2013, Helmholtz Centre for Environmental Research, Leipzig, Germany.
7. André, Frédéric, **Tran, Anh Phuong**, Mourmeaux, Nicolas, & Lambot, Sébastien.(2013). Intrinsicmodeling of near-field ground penetrating radar and electromagnetic induction antennas for layered medium characterization. In Geophysical Research Abstracts, vol.15 (p. p. EGU2013-11565). Vienna, Austria: Copernicus.
8. Lambot, Sébastien, **Tran, Anh Phuong**, & André, Frédéric (2012). A closed form full-wave radar model for near-field layered media reconstruction. Communication présentée à XIX Riunione Nazionale di Elettromagnetismo, Rome (Italy).
9. Lambot, Sébastien, **Tran, Anh Phuong**, & André, Frédéric (2012). Far-field and near-field modeling of ground-penetrating radar for digital soil mapping. Communication présentée à 16th International Water Technology Conference, Istanbul, Turkey.
10. Mahmoudzadeh Ardekani, Mohammad Reza, **Tran, Anh Phuong**, Minet, Julien, Vanclooster,

Marnik, & Lambot, Sébastien (2012). Ground-penetrating radar for temporal soil moisture variability analysis along a land slope. Communication présentée à EGU General Assembly 2012, Vienna (Austria).

11. Mourmeaux, Nicolas, André, Frédéric, **Tran, Anh Phuong**, & Lambot, Sébastien (2012). Modeling of near-field ground-penetrating radar for digital soil mapping. Communication présentée à PhD Student Day ENVITAM, Espace Senghor, Gembloux.
12. Lambot, Sébastien, **Tran, Anh Phuong**, & André, Frédéric (2012). Near-field modeling of radar antennas for wave propagation in layered media: when models represent reality. Communication présentée à 14th International Conference on Ground Penetrating Radar (GPR 2012), Shanghai (Chine).
13. Lambot, Sébastien, **Tran, Anh Phuong**, & André, Frédéric (2012). On the importance of modeling antenna- material coupling for quantitative characterization using GPR. Communication présentée à 18th European Meeting of Environmental and Engineering Geophysics of the Near Surface Geoscience Division of EAGE - Workshop "New Developments on GPR theory and applications", Paris (France).
14. **Tran, Anh Phuong**, & Lambot, Sébastien (2012). Temporal and spacial characterization of soil moisture by near-field GPR data. Communication présentée à PhD Student Day ENVITAM, Espace Senghor, Gembloux.
15. **Tran, Anh Phuong**, Mahmoudzadeh Ardekani, Mohammad Reza, & Lambot, Sébastien (2011). Frequency dependence of soil permittivity and conductivity estimated by ground-penetrating radar full-waveform inversion. EGU General assembly, Vienna, Austria.